--~~14~~ 11. The electrochemical element of claim ~~12~~ 9, wherein said ceramic element is integrally formed.

REMARKS

Reconsideration and allowance of this application in view of the foregoing amendments and the following remarks is respectfully requested. A Petition for an extension of time is being submitted concurrently herewith for parent application Serial No. 08/518,646 to maintain copendency.

Claims 4-7 remain pending in the application. New claims 8-14 have been added. Claims 1-3 have been cancelled.

In the Office Action dated April 14, 1997 in parent application Serial No. 08/518,646 claims 1 and 3-7 stand rejected under 35 U.S.C. §103 as being unpatentable over Singh et al. (5,306,574) in combination with Riley (4,943,494) and Makiel (4,640,875). Existing claims 4-7 and new claims 8-12 are believed patentable over this combination of references for the reasons discussed below.

Independent claim 4 is directed to an ionically conductive ceramic element. Independent claim 9 is directed to an oxygen generator. Claim 4 includes a first ceramic element which includes a plurality of tubes and a tube support member. Both the plurality of tubes and the tube support member are made from the ionically conductive ceramic material. Claim 9 recites a "first ceramic

element having a tube support member and an array of tube members extending from said tube support member and formed into columns and rows." Both independent claims 4 and 9 (and new independent claim 12) require the support member and tubes to be ceramic. Further, in claim 4 the electrodes are formed of electrically conductive coatings.

By contrast, Singh discloses an electrochemical cell 12 having an interior electrode 14, an exterior electrode 16 and solid oxide electrolyte 15, between the electrodes. Electrodes 14, 16 and electrolyte 15 are supported by a porous concentric support 13. Each porous concentric support 13 is inserted into a porous barrier 30. Singh notes in column 2, lines 42-44, that "[e]lectrolyte 15 must be a solid material through which oxygen ions can diffuse or permeate." Thus, the porous barrier 30 is not an electrolyte.

Thus, Singh does not disclose a ceramic element having a ceramic support member or ceramic tubes as required by claim 4 nor does it disclose a first ceramic element recited in claim 9. Further, Singh has different electrical connections between electrodes than those recited in claim 4. For example, in Singh the electrical connections between adjacent electrodes are made through direct contact interconnection on the outer periphery of each of the cells. By contrast, the electrodes in claim 4 are formed from electrically conductive coatings. Although the series parallel arrangement required in the present invention is the same

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as that disclosed in Singh, the manner in which the electrical connections are made is different.

Riley does not overcome the deficiencies noted above with respect to Singh. Riley merely discloses the prior art configurations disclosed in Singh and Makiel but manifolds together a plurality of SOFC modules 50 within a plurality of ceramic blocks 92-99 arranged in a stack configuration. Thus, with respect to the present invention recited in claims 4 and 9, Riley is irrelevant.

Further, Makiel does not overcome the deficiencies noted above with respect to Singh. Makiel discloses the same electrical connections as those disclosed in Singh and Riley. Makiel discloses in column 6, lines 1-8 that "[t]he oxidant conduits 20 are <u>preferably loosely supported</u> at one end in the sheet 34 as best shown in Fig. 4. The sheet 34 is preferably stainless steel with bores 60 that fit loosely about the conduits 20 to allow free thermal expansion. The conduits 20 are preferably comprised of alumina, and the sheet 34 is covered with an insulation such as low density alumina. A <u>small leakage</u> of oxidant, as indicated by arrow 63, is acceptable." This leakage, although acceptable in a fuel cell, is unacceptable for use in the oxygen generators recited in the invention of claim 8. It should be noted that porous partition 32 allows flow between chambers 14 and 16 (see col. 5, lines 12-19). The porous partition 32 is a porous ceramic such as fibrous alumina felt (furnace insulation). Thus, Makiel does not disclose

a ceramic element required in claims 4, 9 and 12 on the electrical interconnections required in claim 4.

Additionally, the nickel felt interconnections required by Riley would oxidize (rendering them useless) under oxygen generator operating conditions. These nickel felt interconnections are acceptable for the solid oxide fuel application for which they are intended as disclosed in Makiel.

Thus, it is believed that all of the presented claims are clearly patentable over the applied combination of references. Accordingly, the obviousness rejection of claims 4-7 should be withdrawn. The remaining dependent claims are patentable for the reasons discussed above with respect to claims 4 and 9 as well as on their own merits.

All objections and rejections having been addressed, it is respectfully submitted that the present application is in condition for allowance, and a Notice to that effect if earnestly solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including

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extension of time fees, to Deposit Account 07-1337 and please credit any excess fees to such deposit account.

Respectfully submitted,

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